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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/823,238	04/12/2004	Chih-Feng Huang	JCLA12521	4073
23900	7590	05/30/2006	EXAMINER	
J C PATENTS, INC.			LE, THAO P	
4 VENTURE, SUITE 250				
IRVINE, CA 92618			ART UNIT	PAPER NUMBER
			2818	
DATE MAILED: 05/30/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/823,238

Applicant(s)

HUANG ET AL.

Examiner

Thao P. Le

Art Unit

2818

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 4/7/06.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

DETAILED ACTION

**Response to Amendment**

This Office Action is in response to Amendment filed on 04/07/06.

Claims 1, 12 have been amended.

Claims 1-16 are pending.

Remark of Applicants has been considered and found persuasive.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller, Jr. et al. U.S. Patent No. 6,300,668, hereinafter Miller, in view of Anderson, U.S. Pat. No. 6,951,384.

Regarding claim 1, Miller discloses a process of fabricating a high resistance CMOS resistor, See Figs. 1-3, Cols. 1-12, comprising the step of:

Providing a p-type silicon substrate 10 (line 43, Col. 2);

Forming an n-well in the p-type silicon substrate (13, Fig. 1; lines 55-2, Col.2);

Forming a p-well in a non-active area of the p-type silicon substrate (p-well as part of PMOS of CMOS process);

Forming a pad oxide layer on the surface of the p-type silicon substrate (the insulating is formed as part of conventional CMOS process, Fig. 3);

Forming a first p-field region into the p-well and a second p-field region into the n-well, wherein the second p-field region forms a CMOS resistor (lines 65-67, Col. 2; lines 1-14, Col. 3);

Forming a field oxide layer over the CMOS resistor (as part of conventional CMOS process; for more interest, Adamic, U.S. Patent No. 6,124,179 or Wu et al., U.S. Patent No. 5,545,584 disclose the oxide layer formed over the CMOS transistor).

Forming an n-type contact region and two p-type contact regions as first and second ohmic contacts (see Figs. 2A, 2E, and Fig. 3);

Forming two metal contacts regions as first and second contact region 32;

Miller fails to disclose the formation of BPSG layer as an intermetal dielectric layer before forming the metal contacts, and fails to form the passivation layer over the contact plugs. Anderson discloses the passivation layer over the contact plug. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the passivation layer over the contact plug because the passivation formed over the contact plug for protection of the contact plug and for adhesion. It is well known in the art that BPSG is formed as intermetal dielectric layer because BPSG exhibits low temperature flow properties. It is also alkali ion getter and exhibits low stress and some VLSI processes would benefit from being performed at lower temperatures because such high temperatures result in excessive diffusion of shallow junction.

Regarding claims 2-11, 13-15, it would have been obvious to one having ordinary skill in the art that the selection of such parameters such as **energy, concentration, temperature, time, molar fraction, depth, thickness, etc.**, would have been obvious and involve routine optimization which has been held to be within the level of ordinary skill in the art. "Normally, it is to be expected that a change in **energy, concentration, temperature, time, molar fraction, depth, thickness, etc.**, or in combination of the parameters would be an unpatentable modification. Under some circumstances, however, changes such as these may impart patentability to a process if the particular ranges claimed produce a new and unexpected result which is different in kind and not merely degree from the results of the prior art ... such ranges are termed "critical ranges and the applicant has the burden of proving such criticality.... More particularly, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller* 105 USPQ233, 255 (CCPA 1955). See also *In re Waite* 77 USPQ 586 (CCPA 1948); *In re Scherl* 70 USPQ 204 (CCPA 1946); *In re Irmischer* 66 USPQ 314 (CCPA 1945); *In re Norman* 66 USPQ 308 (CCPA 1945); *In re Swenson* 56 USPQ 372 (CCPA 1942); *In re Sola* 25 USPQ 433 (CCPA 1935); *In re Dreyfus* 24 USPQ 52 (CCPA 1934).

Regarding claim 12, Anderson discloses the metal contact comprises AlSiCu.

Regarding claim 16, Miller discloses the process is compatible with a standard CMOS process (abstract).

**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thao P. Le whose telephone number is 571-272-1785. The examiner can normally be reached on M-F (8-6).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor Minsun O. Harvey can be reached on 571-272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Thao P. Le  
Primary Examiner  
Art Unit 2818  
May 23, 2006.